

Atty. Dkt. No. 016907-1634

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Tomoya SANUKI

Title: SEMICONDUCTOR DEVICE

Appl. No.: 10/804,206

Filing Date: 03/19/2004

Examiner: Hung K. Vu

Art Unit: 2811

**INFORMATION DISCLOSURE STATEMENT**  
**UNDER 37 CFR §1.56**

Mail Stop AMENDMENT  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Submitted herewith on Form PTO/SB/08 is a listing of documents known to Applicant in order to comply with Applicant's duty of disclosure pursuant to 37 CFR §1.56.

A copy of each non-U.S. patent document and each non-patent document is being submitted to comply with the provisions of 37 CFR §1.97 and §1.98.

The submission of any document herewith, which is not a statutory bar, is not intended as an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicant does not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document which is determined to be a *prima facie* art reference against the claims of the present application.

09/06/2005 JADD01 00000127 10804206

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### **TIMING OF THE DISCLOSURE**

The listed documents are being submitted in compliance with 37 CFR §1.97(d), before payment of the issue fee.

### **RELEVANCE OF EACH DOCUMENT**

Documents A1-A6 on the attached PTO/SB/08 were cited as being relevant during the prosecution of a counterpart Japanese patent application. An English translation of the foreign-language documents is not readily available. However, the absence of such translation does not relieve the PTO from its duty to consider the submitted foreign language documents (37 CFR §1.98 and MPEP §609). English language abstracts of the foreign language documents are provided for the Examiner's convenience.

A translation of a portion of a Japanese Office Action that issued July 19, 2005, with respect to the counterpart Japanese patent application, is provided below:

- Claims 1 to 5
- References 1 to 5
- Notes: With regard to Claims 1, 2 and 5:  
See, for example, Reference 1, paragraphs [0015] to [0016], FIGS. 1 to 2, Reference 2, paragraphs [0022] to [0023], FIGS. 3 to 4, and Reference 3, paragraph [0060]. (It should be noted that the fact that a silicon nitride film has a larger thermal expansion coefficient than that of a silicon substrate is conventionally known as discussed in Reference 5, paragraph [0048].)
- With regard to Claims 3 to 5:  
Reference 3, paragraph [0060] discusses that a metal is used as a filling material to the trench, and Reference 4, page 4, left column, lines 27 to 28 discloses a material having a better heat conductivity.

Further, in the invention disclosed in Reference 1, paragraphs [0026] to [0028], FIGS. 11 to 12, it is achievable in accordance with necessity for a person having ordinary skill in the art easily and, paragraph [0060] that the trench is filled with the metal, a material with a better thermal conductivity, in place of the STI filler oxide film 22. Although this reference does not explicitly state that the metal, or the material with a better thermal

conductivity has a larger thermal expansion coefficient than that of a silicon substrate, the metals that are usually employed in the manufacture of semiconductors have a larger thermal expansion coefficient than that of the silicon substrate, and therefore this aspect is not considered particularly different.

- Claims 1 and 2
- Reference 6
- Notes:  
See the prior art document 6, claim 7, paragraph [0033] etc.

#### LIST OF REFERENCE

Jpn. Pat. Appln. KOKAI Publication No. 2003-115592  
Jpn. Pat. Appln. KOKAI Publication No. 2001-223266  
Jpn. Pat. Appln. KOKAI Publication No. 09-321134  
Jpn. Pat. Appln. KOKAI Publication No. 2002-124564  
Jpn. Pat. Appln. KOKAI Publication No. 2001-160589  
Jpn. Pat. Appln. No. 2003-154085 (KOKAI No. 2005-005321)

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#### Record of Prior Art Search Results

- Searched field          IPC 7<sup>th</sup> edition          H01L21/76

This Record of Prior Art Search Results does not constitute a reason for rejection.

Applicant's statements regarding the Japanese Office Action are based on a partial translation that Applicant's representative obtained. These statements should in no way be considered as an agreement by Applicant with, or an admission of, what is asserted in the Japanese Office Action.

Applicants respectfully request that any listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

#### **STATEMENT**

The undersigned hereby states in accordance with 37 CFR §1.97(e)(1) that each item of information contained in this information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three (3) months prior to filing of this Statement.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 CFR §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

**FEE**

A fee in connection with submission of an information disclosure statement under 37 CFR §1.97(d) in the amount of \$180.00 in accordance with 37 CFR §1.17(p) is attached.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 CFR §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

Respectfully submitted,

Date

September 2, 2005

By

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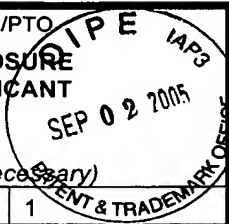
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Attorneys for Applicant

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449B/PTO <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> (use as many sheets as necessary)				<b>Complete if Known</b>	
				Application Number	10/804,206
				Filing Date	03/19/2004
				First Named Inventor	Tomoya SANUKI
				Group Art Unit	2811
				Examiner Name	Hung K. Vu
Sheet 1 of 1				Attorney Docket Number	016907-1634

U.S. PATENT DOCUMENTS						
Examiner Initials*	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			

FOREIGN PATENT DOCUMENTS								
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Documents	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)				
	A1	JP	2003-115592			04-18-2003		
	A2	JP	2001-223266			08-17-2001		
	A3	JP	09-321134			12-12-1997		
	A4	JP	2002-124564			04-26-2002		
	A5	JP	2001-160589			06-12-2001		
	A6	JP	2005-005321			01-06-2005		

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>6</sup>

Examiner Signature	Date Considered	
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\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number. <sup>2</sup> See attached Kinds of U.S. Patent Documents. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.

<sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.